

Continued Roles for the AAVP7 with the Fielding of the EFV

EWS 2005

Subject Area General

Continued Roles for the AAVP7 with the Fielding of the EFV

Submitted by Captain EP Dominijanni

To

Major PJ Nugent, CG 10

05 January 2005

<b>Report Documentation Page</b>			Form Approved OMB No. 0704-0188		
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>					
1. REPORT DATE <b>05 JAN 2005</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-2005 to 00-00-2005</b>			
<b>4. TITLE AND SUBTITLE</b> <b>Continued Roles for the AAVP7 with the Fielding of the EFV</b>			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
<b>6. AUTHOR(S)</b>			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> <b>United States Marine Corps,Command and Staff College, Marine Corps Combat Development Command,Marine Corps University, 2076 South Street,Quantico,VA,22134-5068</b>			8. PERFORMING ORGANIZATION REPORT NUMBER		
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b>			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
<b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b> <b>Approved for public release; distribution unlimited</b>					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b>					
<b>15. SUBJECT TERMS</b>					
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b> <b>Same as Report (SAR)</b>	<b>18. NUMBER OF PAGES</b> <b>12</b>	<b>19a. NAME OF RESPONSIBLE PERSON</b>
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

## **Thesis**

The Marine Corps should retain the Assault Amphibian Vehicle Personnel variant (AAVP7) in order to fulfill missions the Expeditionary Fighting Vehicle (EFV) is not designed to accomplish.

## **History**

Roebling originally designed the grandfather of the AAV, the Alligator for use as a personnel transport and rescue vehicle in Floridian swampland during floods. Dubbed the Landing Vehicle Tracked (LVT), the USMC purchased this vehicle to transport both Marines and cargo from ship, across reefs, to the shore and back for subsequent landing waves. The LVT was used extensively in WWII against the Japanese during the Island Hopping Campaign. The Marine Corps originally intended the LVT to function solely as a logistic vehicle but was soon fitted with weapons and increased armor for use in assaults against Japanese-held beaches once it had realized its full potential. From its inception the family of LVTs has changed very little in its role until the fielding of the EFV. The EFV, unlike its ancestors, is an entirely new vehicle with both new capabilities and a new role.<sup>1</sup>

## **Capabilities**

Comparison of Selected EFV Requirements With AAV Current Capabilities

Function	EFV requirement	AAV capability
Water speed	23-29 miles per hour	6-8 miles per hour
Cross-country land speed	Keep up with main battle tank, which travels at about 30 miles per hour	15-20 miles per hour
Range on water	65 miles	45 miles
Range on land	300 miles	300 miles
Troop-carrying capacity	18 combat-equipped troops	21 combat-equipped troops
Survivability (armor protection)	Survive 14.5mm bullets without attaching enhanced armor plating to vehicle's hull	Can only survive 14.5mm bullets if Enhanced Armor Applique Kit (EAAK) has been attached to vehicle's hull
Lethality (main armament)	Bushmaster II 30mm cannon - Defeat light armored combat vehicles of 2005 -2025 time frame during day and night while moving	40mm and .50 caliber machine guns, which cannot defeat light armored combat vehicles of today <sup>2</sup>

While the EFV provides increased overall lethality, mobility, and survivability it, by design, will have a greatly reduced capability to serve as a general purpose vehicle able to support a myriad of functions and missions. Flexibility to perform logistics missions was sacrificed to gain the increased capability in lethality mobility and survivability. The EFV with its individual folding personnel seats, reduced ramp width, and lack of two, large, upper troop compartment hatches, is no longer capable of functioning as a viable logistics vehicle, and

is now restricted to transporting troops and supporting them in assault waves ashore and inland. Although post World War II conflicts have not seen logistics transport as the primary role of the AAV it is still something to be considered with the replacement of the AAV by the EFV. The AAV while dwarfed in comparison by the capabilities of the EFV is still a highly versatile vehicle capable of numerous functions may need and assuming various support roles.

#### Questions:

- What roles can the AAVP7 fill once the EFV has been fully fielded?
- How do we integrate AAV and EFV capabilities in a mixed fleet?
- What units will require AAV support?

#### Options:

There are currently only two variants of EFV slated for production: A Personnel carrier and Command and Control variant. There is currently no Recovery variant nor is there an Engineer Obstacle Clearing Detachment (OCD) variant capable of being fitted with Mk 154 Mine Clearing Line Charge kit<sup>3</sup>. The current AAVR7 will continue to serve as a recovery vehicle. While the Engineers will eventually see the fielding of the Armored Breacher Vehicle (ABV) the AAV with Line charge kit can still be

used during the interim before the fielding of this new obstacle breaching vehicle.

## **Engineers**

The 2<sup>nd</sup> and 3<sup>rd</sup> Assault Amphibian Battalions (AABns) each have Mobility Counter Mobility (MCM) Platoons consisting of 24 AAVP7s. Half of these AAVP7s are used to support engineer operations with Obstacle Clearing Detachment (OCD) teams. The remaining 12 vehicles are used for transporting engineers and Class IV and V (Construction and Demolition) materiel. There is currently no EFV variant slated to support the mine clearing function and with the difference in the dimensions of upper troop hatches the EFV can no longer support this role should the Mine Clearing Line Charge (MCLC) be made available. New EFV Battalions can continue to provide Engineer Battalions with mechanized lift for Engineers and OCD support by keeping the 24 MCM AAVP7s in Headquarters and Support Company or as part of a new General Support Company.

Allocating AAVs will provide Engineer Battalions the ability to breach and clear minefields, while transporting Engineers and Class IV and V materiel in a highly mobile, armored vehicle with a significant offensive capability. Further, this allows Engineers to keep up with and even pass

forward of forward assault elements in order to conduct construction or obstacle reduction missions.

Although the ABV, which when fielded will be a tremendous asset for engineers and OCD teams, it is not amphibious and will not be able to traverse bodies of water that it may have to cross to keep pace with the assault elements. Other than the AAVP7s with Mk154 Launcher, Mine Clearance (LMC) there is no vehicle in the Marine Corps inventory capable of breaching obstacles from the high water mark inland.<sup>4</sup>

## **Infantry**

The EFV specializes as an armored personnel carrier using fold down, individual seats rather than removal benches. This interferes with the loading, unloading and transport of cargo. The Infantry Battalions often request that their 81mm Mortars receive the mechanized support of five additional AAVs (Two tubes per AAV with one extra vehicle for extra ammunition and FDC). The combination of troops, ammunition and 81mm tubes can take up considerable space and may effect their rapid deployment from the vehicle to their Mortar Positions (MPs). AAV companies could retain five additional vehicles in a General Support Section. This would allow a substantial degree of mobility for 81mm Mortars on the battlefield compared to their organic wheeled assets. This again will allow the Mortar section to

keep up with the supported units and are able to quickly deploy, displace and traverse terrain restrictive to wheeled vehicles and provide responsive fires in support of the Infantry. Also, the UpGunned Weapon Station (UGWS), specifically the indirect fire capabilities of the 40mm cannon coupled with the indirect fires of the 81mm Mortar tubes, would be capable of providing formidable Indirect Fire Support to the Infantry.

## **Logistics**

Logistics capabilities of the AAVP7A1:

- 10,000 pound payload
- M151 Jeep or vehicle of equivalent size
- M416 trailer
- Seventeen 55 gallon drums
- M12A1 Decon with 500 gallon tank
- 138 cases of .50 caliber ammunition
- 330 unpalletized 5 gallon water cans
- 400 cases of MREs
- Two 500 gallon fuel bladders with pump and hoses<sup>5</sup>

The AAVP7 possesses a substantial capability to continue service as a logistics vehicle.

AAVP7s could be made available to support Transportation Support Battalions (TSB). This would provide increased defensive and offensive capabilities and superior mobility and survivability in comparison to the Medium Tactical Vehicle Replacement (MTVR) or Logistic Vehicle System (LVS). AAVs supporting these units will be capable of transporting large quantities of troops and cargo across terrain not accessible to

wheeled vehicles increasing the overall responsiveness and reach of logistic support. The AAVs in support of these Logistic units will be an augment to and not a replacement for the MTVR and LVS. AAVs used in support of this role will also be able to serve as mechanized logistic vehicles as well as assume roles in both convoy and rear area security.

Command variants (AAVC7s) could be provided to serve as a mobile Logistic Operations Center (LOC).

### **Assault Amphibian Battalions**

AABns could continue to keep AAVs organic to the AAV H&S Companies tasked as mechanized logistic vehicles and ambulances in support of forward operating mechanized forces. Using the AAV in these capacities will allow the organic battalion logistic trains to extend their reach to include the EFVs as they negotiate the varying terrain restrictive to wheeled vehicles. AAVs could be retained in the AAV Companies specifically into the HQ platoon and operated by the Company Gunnery Sergeant or even to the Platoon Sergeants at the platoon level, allowing for an increased logistic support capable of being provided at the company level.

An estimate of retention of one AAV Company's vehicles would be needed to support this.

<b>Total</b>			
#	<b>Supported Unit</b>	<b>AAV Unit</b>	<b>AAV Unit Level</b>
05	81mm Mortars	GS Section	Company
24	Engineer Bn	MCM Plt/GS Co	Battalion
12	TSB	GS Company	Battalion
02		Company	Company
02		Platoon	Platoon

### **Challenges**

- Two Class IX (Repair parts) block.
- Two operator courses.
- Two Mechanic courses.

### **Solutions**

The increased cost of maintaining a Class IX block to support a mixed fleet along with the increased logistic footprint in a tactical environment may be balanced by the benefit brought through the increased protection, lift and reach of the logistic capability the AAVs may continue to provide.

The problems of educating both AAV and EFV operators and mechanics could be overcome by the continued use of the already existing knowledge of the AAV resident in the community.

Existing AAV operators (1833s) and mechanics (2141s) can continue to work on their vehicles for many years until the full fielding of the EFV with possible new variants to support these needs.

### **Summary**

The AAVP7, while clearly outmatched in every aspect by the EFV, still maintains a great degree of flexibility which the EFV no longer offers and can continue its role as the Workhorse of the Marine Corps by providing substantial support to the Assault Amphibian, Infantry, Engineer and Logistics communities, and should be integrated with the EFV during its fielding in the near future.

## Notes

---

<sup>1</sup> "Ships of the U.S. Navy"

<sup>2</sup> "Expeditionary Fighting Vehicle"

<sup>3</sup> "Mk154 Mine Clearance Launcher"

<sup>4</sup> "Naval Responsibilities and Capabilities"

<sup>5</sup> "Logistics Capabilities of the AAVP7A1," Amphibian Officer Course. 1999

---

## Bibliography

"Advanced Amphibious Assault Vehicle,"  
<http://www.fas.org/man/dod-101/sys/land/aaav.htm>

"Assault Breacher Vehicle,"  
<http://www.globalsecurity.org/military/systems/ground/abv.htm>

"Expeditionary Fighting Vehicle (EFV),"  
<http://www.globalsecurity.org/military/systems/ground/aaav-specs.htm>

United States Marine Corps, Amphibian Officer Course. 1999

United States Marine Corps, "Mk154 Mine Clearance Launcher,"  
<http://www.hqmc.usmc.mil/factfile.nsf/7e931335d515626a8525628100676e0c/ca9b3f16bb268b6b8525627a0050d328?OpenDocument>

United States Marine Corps, "Naval MCM Responsibilities and Capabilities,"  
[http://www.lejeune.usmc.mil/mces/Systems%20Brief%20USN%20solutions%20\[Read-Only\].pdf](http://www.lejeune.usmc.mil/mces/Systems%20Brief%20USN%20solutions%20[Read-Only].pdf)

United States Navy, "Advanced Amphibious Assault Vehicle,"  
[http://www.navyleague.org/legislative\\_affairs/AAAV.pdf](http://www.navyleague.org/legislative_affairs/AAAV.pdf)

United States Navy, "Ships of the U.S. Navy, 1940-1945,"  
<http://www.ibiblio.org/hyperwar/USN/ships/LVT/LVT.html>